

Epic Systems

Deployment Guide

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1 Introduction

Epic develop software for mid-size and large medical groups, hospitals and integrated healthcare organizations, working with customers that include community hospitals, academic facilities, children's organizations, safety net providers and multi-hospital systems. Epic's applications support functions related to patient care, including:

- Registration and scheduling
- Clinical systems for doctors, nurses, emergency personnel and other care providers
- Systems for lab technologists, pharmacists and radiologists
- Billing systems for insurers

The Kemp LoadMaster is used to load balance the Epic workload. The LoadMaster offers advanced Layer 4 and Layer 7 server load balancing, SSL Acceleration and a multitude of other advanced Application Delivery Controller (ADC) features. The LoadMaster intelligently and efficiently distributes user traffic among the application servers so that users get the best experience possible.

1.1 Document Purpose

This document provides the recommended LoadMaster settings used when load balancing the Epic workload. The Kemp Support Team is available to provide solutions for scenarios not explicitly defined.

The Kemp support site can be found at: https://support.kemptechnologies.com.

1.2 Intended Audience

Network administrators who are deploying Epic with a Kemp LoadMaster.

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2 Template

Kemp has developed a template containing our recommended settings for this workload. You can install this template to help create Virtual Services (VSs) because it automatically populates the settings. You can use the template to easily create the required VSs with the recommended settings. For some workloads, additional manual steps may be required such as assigning a certificate or applying port following. These steps are covered in the document, if needed.

You can remove templates after use and this will not affect deployed services. If needed, you can make changes to any of the VS settings after using the template.

Download released templates from the following page: LoadMaster Templates.

For more information and steps on how to import and use templates, refer to the Virtual Services and Templates, Feature Description on the Kemp Documentation page.

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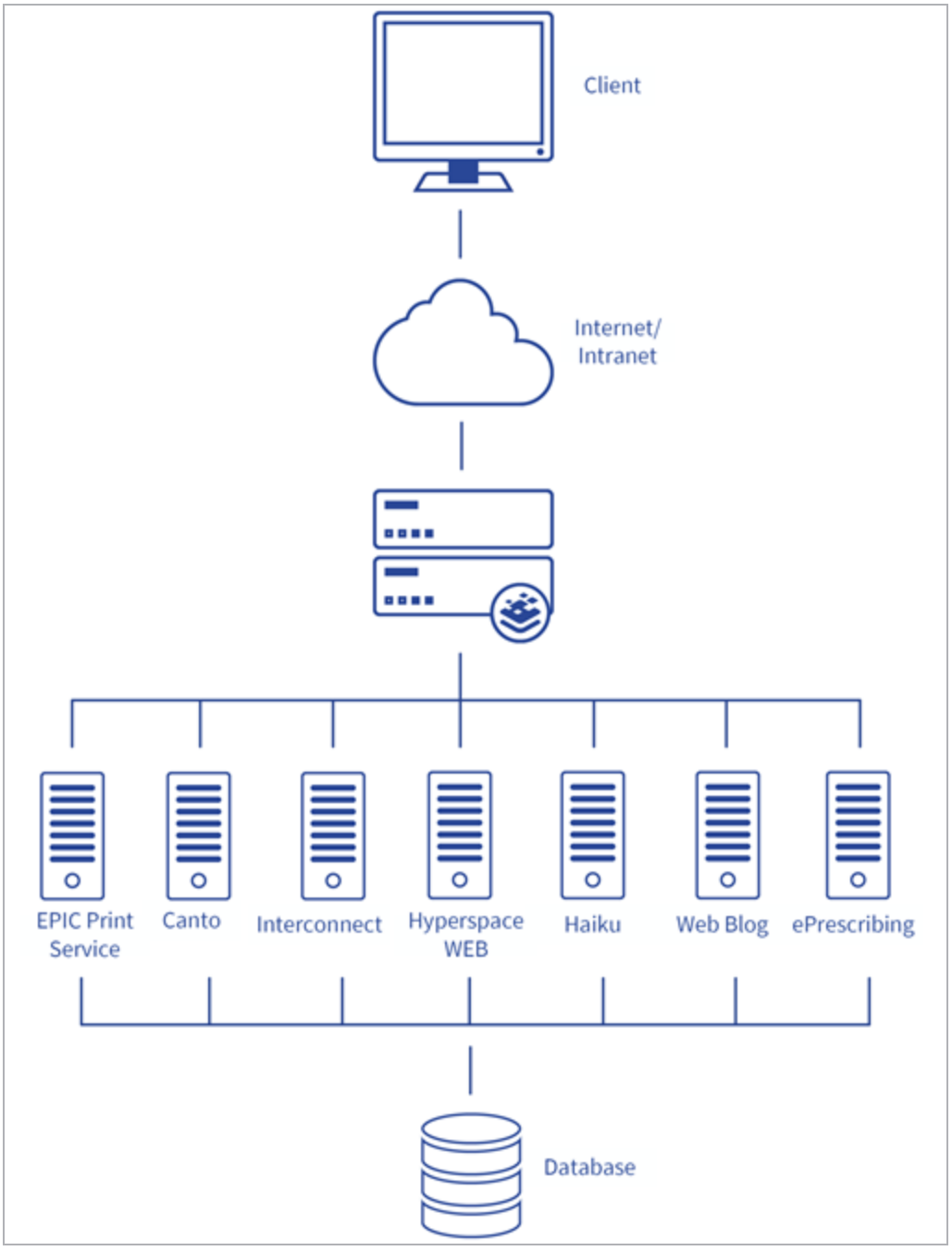
3 Architecture



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The above network architecture diagram depicts how the LoadMaster connects to the different backend components in Epic Systems.

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4 Configure the LoadMaster

The deployed Epic Systems environment determines which of the following setups is used.

The step-by-step instructions in the sections below explain how to configure the LoadMaster using the recommended settings for this workload. The settings and Virtual Services required varies based on your environment. Ensure to change any settings as needed.

4.1 Enable Subnet Originating Requests Globally

It is best practice to enable the **Subnet Originating Requests** option globally.

In a one-armed setup (where the Virtual Service and Real Servers are on the same network/subnet) **Subnet Originating Requests** is usually not needed. However, enabling **Subnet Originating Requests** should not affect the routing in a one-armed setup.

In a two-armed setup where the Virtual Service is on network/subnet A, for example, and the Real Servers are on network B, **Subnet Originating Requests** should be enabled on LoadMasters with firmware version 7.1-16 and above.



When **Subnet Originating Requests** is enabled, the Real Server sees traffic originating from 10.20.20.21 (LoadMaster eth1 address) and responds correctly in most scenarios.

With **Subnet Originating Requests** disabled, the Real Server sees traffic originating from 10.0.0.15 (LoadMaster Virtual Service address on **eth0**) and responds to **eth0** which could cause asymmetric routing.

When **Subnet Originating Requests** is enabled globally, it is automatically enabled on all Virtual Services. If the **Subnet Originating Requests** option is disabled globally, you can choose whether to enable **Subnet Originating Requests** on a per-Virtual Service basis.

To enable **Subnet Originating Requests** globally, follow the steps below:

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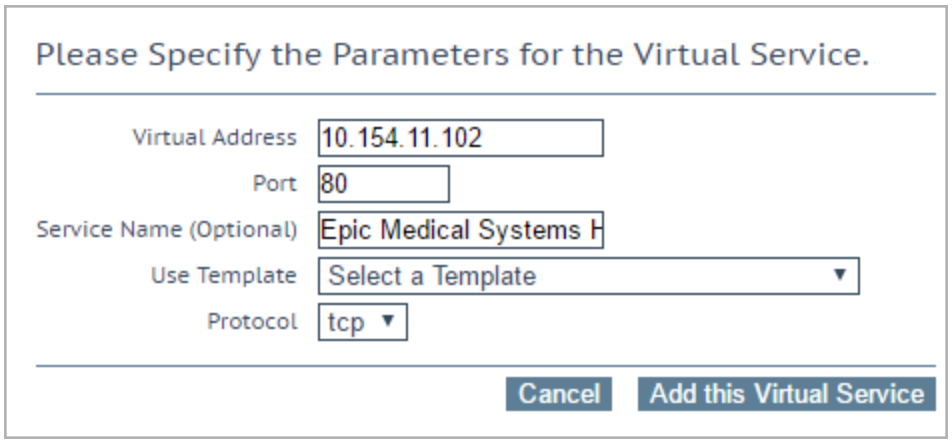
1. In the main menu of the LoadMaster User Interface (UI), go to **System Configuration > Miscellaneous Options > Network Options**.

2. Select the **Subnet Originating Requests** check box.

4.2 Create an Epic Medical Systems HTTP Virtual Service

The following are the steps involved and the recommended settings to configure the Epic Systems HTTP Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.



2. Enter a valid **Virtual Address**.

3. Enter **80** as the **Port**.

4. Enter a recognizable Service Name, such as **Epic Medical Systems HTTP**.

5. Click **Add this Virtual Service**.

6. Configure the settings as recommended in the following table:

Section	Option	Value	Comment
Standard Options	Persistence Mode	Active Cookie	
	Timeout	1 Hour	
	Cookie name	JSESSIONID	Click Set Cookie.
	Idle Connection Timeout	900	Click Set Idle Timeout.

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Section	Option	Value	Comment
Real Servers	URL	/	Click Set URL.

7. Add the Real Servers:

   a) Click the **Add New** button.

   b) Enter the address of the Epic Medical Systems HTTP Server.

   c) Fill out the other fields as needed.

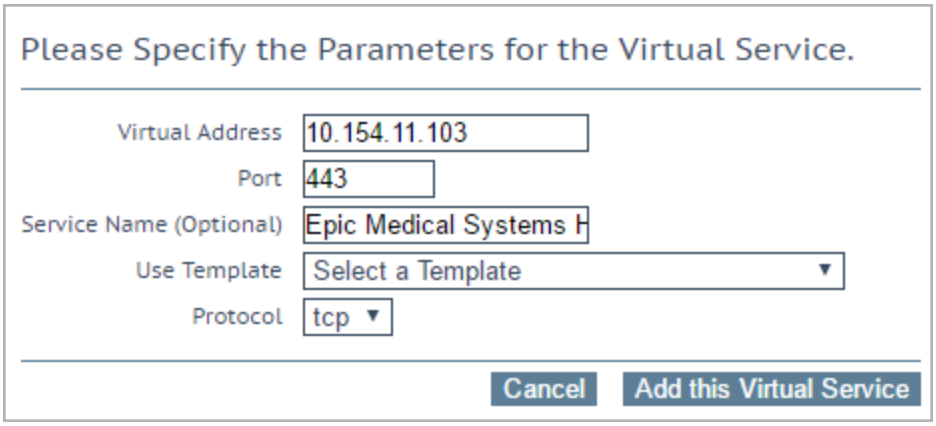
   d) Click **Add this Real Server**. Click **OK** to the pop-up message.

   e) Repeat the steps above to add more Real Servers as needed, based on the environment.

4.3 Create an Epic Medical Systems HTTPS Virtual Service

The following are the steps involved and the recommended settings to configure the Epic Systems HTTPS Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.



2. Enter a valid **Virtual Address**.
3. Enter **443** as the **Port**.
4. Enter a recognizable **Service Name**, such as **Epic Medical Systems HTTPS**.
5. Click the **Add this Virtual Service** button.
6. Configure the settings as recommended in the following table:

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Section	Option	Value	Comment
Standard Options	Persistence Mode	Source IP Address	
	Timeout	1 Hour	
	Idle Connection Timeout	900	Click Set Idle Timeout.
Advanced Properties	Add a Port 80 Redirector VS	https://%h%s	Click the **Add HTTP Redirector** button. This automatically creates a redirect on port 80. This option is only visible if there is no existing port 80 redirect for this Virtual Service.

7. Add the Real Servers:

   a) Click the **Add New** button.

   b) Enter the address of the Epic Medical Systems HTTPS Server.

   c) Click **Add this Real Server**. Click **OK** to the pop-up message.

   d) Repeat the steps above to add more Real Servers as needed, based on the environment.

4.3.1 Configure the Epic Medical Systems HTTPS-HTTP Redirect Virtual Service

Clicking the **Add HTTP Redirector** button automatically creates a port 80 redirect Virtual Service. This is optional, but the purpose of this Virtual Service is to redirect any clients who have connected using HTTP to the HTTPS Virtual Service.

Kemp recommends changing some settings in the Epic Medical Systems HTTPS-HTTP Redirect Virtual Service. The recommended settings are below:

Section	Option	Value
Standard Options	Persistence Mode	None
Real Servers	Real Server Check Method	None

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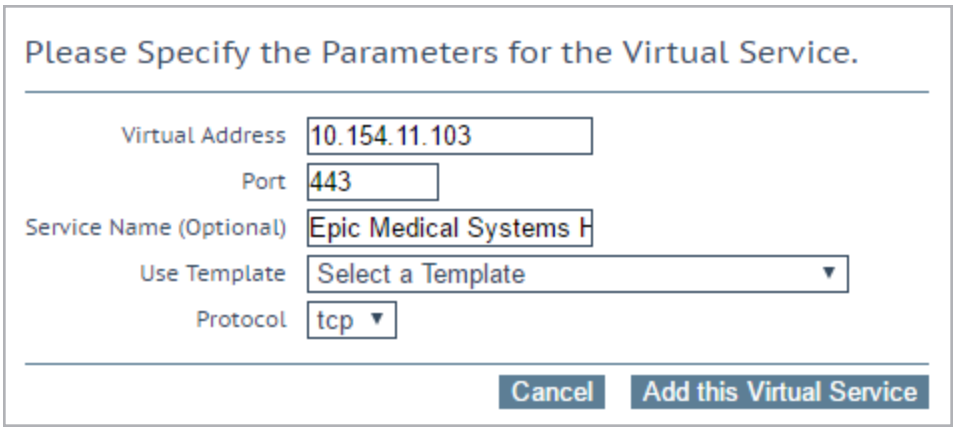
4.4 Create an Epic Medical Systems HTTPS Offloaded Virtual Service

The following are the steps involved and the recommended settings to configure the Epic Systems HTTPS Offloaded Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.



2. Enter a valid **Virtual Address**.
3. Enter **443** as the **Port**.
4. Enter a **Service Name**, for example **Epic Medical Systems HTTPS Offloaded**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value	Comments
Standard Options	Persistence Mode	Active Cookie	SSL Acceleration must be enabled before Active Cookie can be selected as the Persistence Mode.
	Timeout	1 Hour	
	Cookie name	JSESSIONID	Click **Set Cookie**.
	Idle Connection Timeout	900	
SSL Properties	SSL Acceleration	Enabled	

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Section	Option	Value	Comments
	Cipher Set	BestPractices	
Advanced Properties	Add a Port 80 Redirector VS	https://%h%s	Click the **Add HTTP Redirector** button. This will automatically create a redirect on port 80. This option is only visible if there is no existing port 80 redirect for this Virtual Service.
Real Servers	URL	/	

7. Add the Real Servers:

   a) Click the **Add New** button.

   b) Enter the address of the Epic Medical Systems HTTPS Server.

   c) Click **Add this Real Server**. Click **OK** to the pop-up message.

   d) Repeat the steps above to add more Real Servers as needed, based on the environment.

4.4.1 Configure the Epic Medical Systems HTTPS Offloaded HTTP Redirect Virtual Service

Clicking the **Add HTTP Redirector** button automatically creates a port 80 redirect Virtual Service. This is optional, but the purpose of this Virtual Service is to redirect any clients who have connected via HTTP to the HTTPS Virtual Service.

Kemp recommends changing some settings in the Epic Medical Systems HTTPS HTTP Redirect Virtual Service. The recommended settings are below:

Section	Option	Value
Standard Options	Persistence Mode	None
Real Servers	Real Server Check Method	None

4.5 Create an Epic Medical Systems HTTPS Re-encrypt Virtual Service

The following are the steps involved and the recommended settings to configure the Epic Systems HTTPS Re-encrypt Virtual Service:

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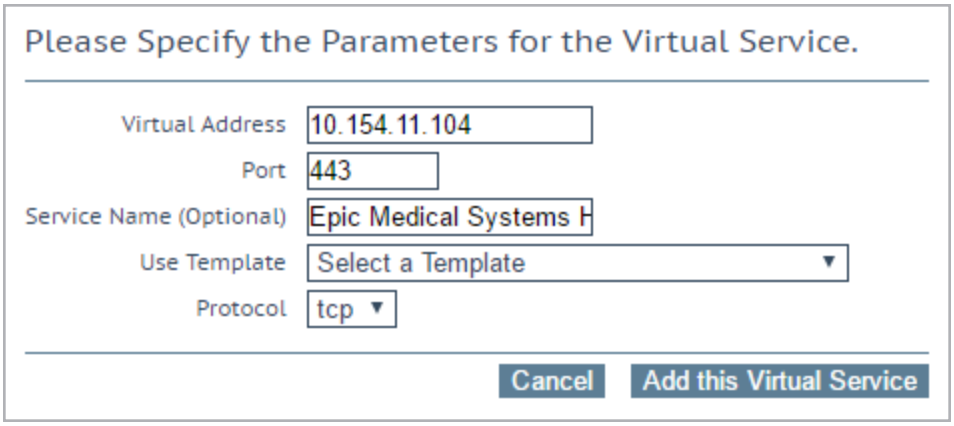
1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.



2. Enter a valid **Virtual Address**.
3. Enter **443** as the **Port**.
4. Enter a **Service Name**, for example **Epic Medical Systems HTTPS Re-encrypt**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value	Comments
Standard Options	Persistence Mode	Active Cookie	SSL Acceleration must be enabled before Active Cookie can be selected as the Persistence Mode.
	Timeout	1 Hour	
	Cookie name	JSESSIONID	Click Set Cookie.
	Idle Connection Timeout	900	
SSL Properties	SSL Acceleration	Enabled	
	Reencrypt	Enabled	
	Cipher Set	BestPractices	
Advanced	Add a Port 80	https://%h%s	Click the **Add HTTP Redirector** button. This

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Section	Option	Value	Comments
Properties	Redirector VS		automatically creates a redirect on port 80. This option is only visible if there is no existing port 80 redirect for this Virtual Service.
Real Servers	Real Server Check Method	HTTPS Protocol	
	URL	/	Click Set URL.

7. Add the Real Servers:

   a) Click the **Add New** button.

   b) Enter the address of the Epic Medical Systems HTTPS Server.

   c) Click **Add this Real Server**. Click **OK** to the pop-up message.

   d) Repeat the steps above to add more Real Servers as needed, based on the environment.

4.5.1 Configure the Epic Medical Systems HTTPS Re-encrypt HTTP Redirect Virtual Service

Clicking the **Add HTTP Redirector** button automatically creates a port 80 redirect Virtual Service. This is optional, but the purpose of this Virtual Service is to redirect any clients who have connected via HTTP to the HTTPS Virtual Service.

Kemp recommends changing some settings in the Epic Medical Systems HTTPS Re-encrypt HTTP Redirect Virtual Service. The recommended settings are below:

Section	Option	Value
Standard Options	Persistence Mode	None
Real Servers	Real Server Check Method	None

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References

Unless otherwise specified, the following documents can be found at http://kemptechnologies.com/documentation.

Feature Description, Virtual Services and Templates

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